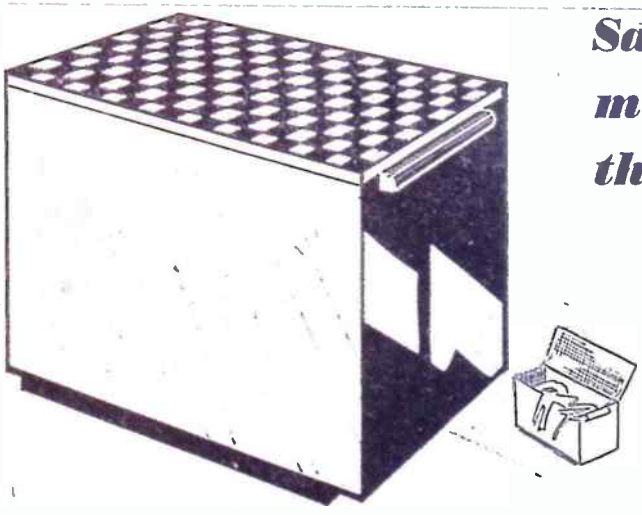
HOBBIES WEEKLY

AUGUST 8th 1956 VOL. 122 NUMBER 3171

IN THIS ISSUE

Hobbies



Save yourselves money by making this for the home

SOILED LINEN BASKET

DESIGNED for economic use of hardboard and simplicity of construction, this linen basket is an ideal project for the handyman. The mortise and tenon joints are well within the scope of the average woodworker and the hardboard is simply pinned over the completed framework to give a neat and easy to clean appearance.

As a seat and linen basket it serves two useful purposes and when painted to match the bathroom it will be equal to any shop-bought article.

The framework is made from 1½in. square material to the measurements shown in Fig. 1. Make allowance, when marking up the rails, for the tenons as shown in Fig. 2. They are mortised into the upright pieces (A) and are mitred to fit. Measurements of the tenons are shown in detail and the section in Fig. 3 shows the tenons mitred at the centre. The two centre-rails (D) are also tenoned in position, but stub tenons are made as shown in Fig. 4. They should be quite short, about ½in. will be sufficient.

When all tenons and mortises have been cut they should be cleaned up and glued in position. Wipe off excess glue before it is dry and cramp up where necessary.

The bottom of the basket rests on the lower rails and is cut at the corners to fit as shown in Fig. 5. It need not be fixed in position. Holes for ventilation should be drilled at intervals as shown in Fig. 5. Alternatively, pegboard could be used for this piece.

THE DIAGRAMS ARE OVERLEAF

Hardboard $\frac{3}{16}$in. or ¼in. thick is now cut and fitted round the sides as shown in Fig. 6, using panel pins for fixing. Drive them slightly under the surface to allow for filling before painting.

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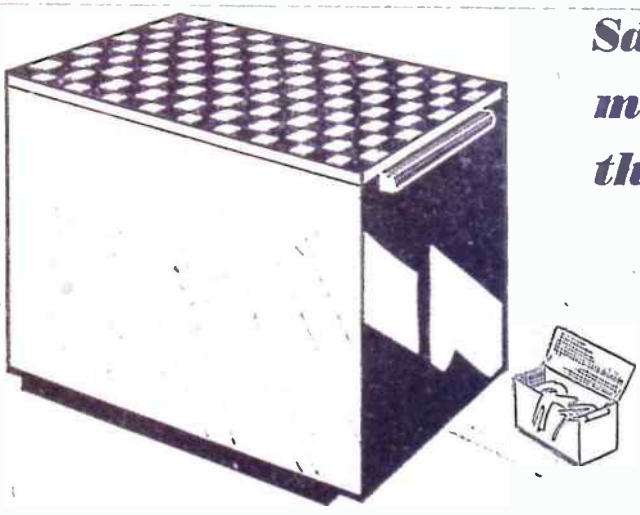

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For a few shillings . . .

MAKE A REALISTIC FORT

By R. H. Warring

THIS model fort is constructed almost entirely out of hardboard, and total cost should not exceed ten shillings — a very reasonable figure in view of its overall size. Working time to complete should be about twelve to fifteen hours, exclusive of painting. All the hardboard parts will come out of a 4ft. by 4ft. panel, with some to spare. Approximately 11ft. of 1in. by ½in. or similar section is required for bracing the base, which should represent the only other expenditure apart from glue and panel pins.

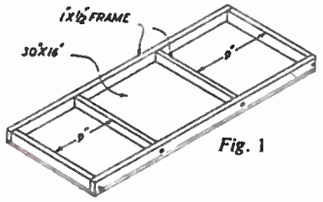


Fig. 1

Assembling the Base

The first part to build is the base, which is a 30in. by 16in. panel of hardboard, braced with a 1in. by ½in. frame as shown in Fig. 1. Frame members are attached by gluing and pinning, a synthetic resin glue being recommended (e.g., Casco One-Shot powder mixture). Assemble the base with the shiny side of the hardboard uppermost.

The two side pieces are then cut from hardboard sheet, as per the layout shown in Fig. 2. The notches are cut out by making vertical saw cuts, scoring along the bottom line and then breaking out the piece. If necessary, clean up with a file or glasspaper, although a slightly rough appearance is quite acceptable. The slits in the towers are formed by drilling at each end with a ¼in. diameter drill, cutting the slot between them with a small saw and then opening up with a ¼in. warding file. Alternatively, the notches along the tops of the walls and towers and the tower slits can be fretted out. To save time in marking out, one side can be finished completely and then used to mark out the other side.

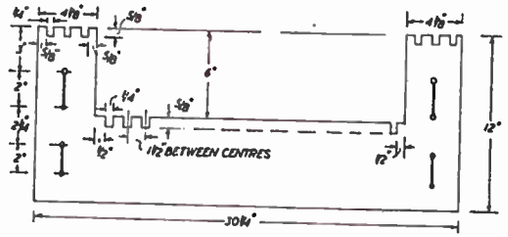


Fig. 2

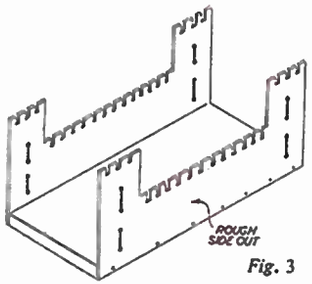


Fig. 3

When finished, the two sides are fastened to the base, as in Fig. 3. The rough surfaces of the hardboard should face outwards to simulate a stone surface. Secure with glue and panel pins spaced at about 3in. intervals.

The 'north' and 'south' ends differ in layout and are detailed in Fig. 4. Again these are cut from hardboard, using the same technique as previously. Finish the extreme edges perfectly true and square and fasten to each end of the base. Tower joints are glued and should be reinforced in places with pins. The best method of fitting the pins is to drill through the facing piece of hardboard and then position the pin carefully and drive home. Two or three pins in each tower will provide sufficient support. The joint can be strengthened by running a fillet of glue down the joint line on the inside, balsa cement being excellent for this purpose.

The remaining parts of the towers are then cut to the patterns shown in Fig. 5.

Note that two off each pattern are required, but arranged so that when assembled, the rough side of the hardboard is facing outwards. No slits are cut in these tower faces.

The two side 'galleries' are simply strips of hardboard 28ins. by 2ins. These locate in the slots cut in the longer tower pieces and should be assembled together, i.e., the galleries slipped into the tower slots, the whole lot offered up, positioned and glued in place. Hold the tower faces with two or three pins as before.

The 'north' end gallery is a piece of hardboard 10ins. by 2ins., which rests on the protruding ends of the side galleries, glued down and supported at the middle with a 3½in. by 2in. upright of hardboard or, preferably, ¼in. to ½in. thick material. In the latter case the gallery can be pinned down to the upright, as well as glued. After the gallery is properly fitted the two 'north' towers can be completed by the addition of the smaller faces, which need only gluing on (Fig. 6).

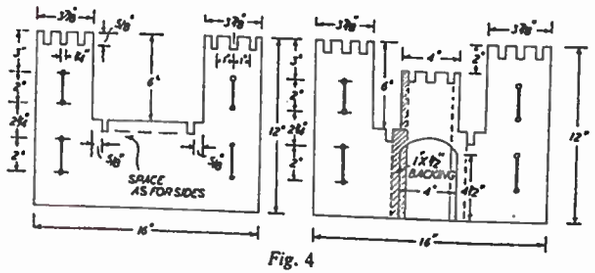


Fig. 4

The 'south' end is somewhat different in that it incorporates an additional false tower with the main doorway and has no gallery running from side to side. Instead, two shorter but wider galleries are erected, cut from hardboard to 6ins. by 3¾ins. Before these are fitted, however, erect the 1in. by ½in. (frame stock) main doorway supports, first marking out and trimming to fit and then gluing and *screwing* to the hardboard. The short gallery pieces are then either trimmed to fit against these door frames or the frames slotted to accommodate the gallery and thus offer more positive support. The inner ends of the galleries (inside the towers) rest on and are glued down to the projecting side galleries, as before. The outer corners of the galleries are supported with wooden posts, these details being shown in Fig. 7.

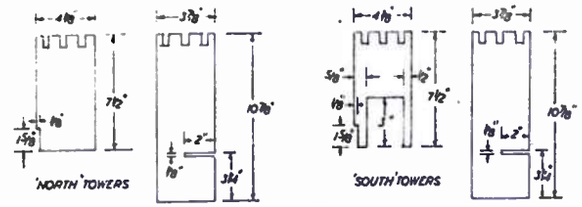


Fig. 5

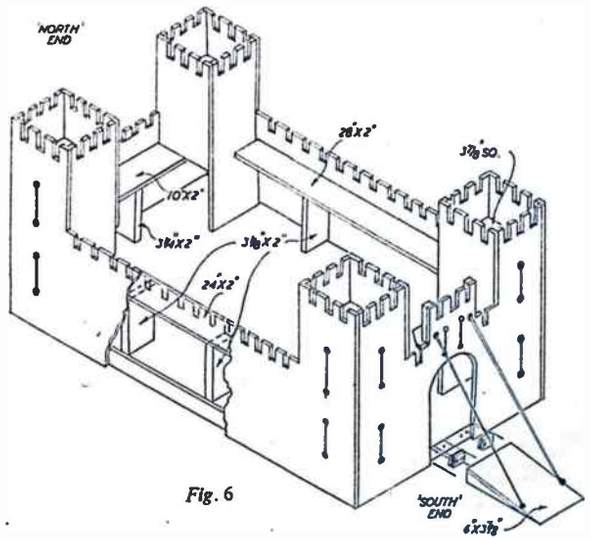


Fig. 6

The 'Windlass'

The remaining sides of the 'south' towers have doorway cut-outs and are simply glued in place. A smaller gallery cut from hardboard is erected on the false tower, as shown, pinning and gluing down to the trimmed door frames. This carries the 'windlass' for operating the drawbridge and the 'free' corners should be tapered and rounded off, so as not to mask off the galleries immediately below. 3¾in. square 'floors' are cemented and pinned into each tower at a suitable height, e.g., 1½ins. below the top edge.

The drawbridge is a piece 6ins. by 3¾ins. fitted with two wedge-shape pieces cut from the frame stock and the lower edge feathered to produce a smooth ramp leading up to the base height. It can conveniently be mounted on small hinges, or alternatively, strips of tape glued on in place of conventional hinges and performing the same function. It is drawn upwards by two strings or model chains passing through holes drilled in the false tower side-members and terminating on a cotton reel. This cotton reel is mounted on a short length of dowel glued into a hole drilled in the hardboard platform behind the tower, and should either be a friction fit on the dowel, or the hole in the cotton reel packed tight with scrap wood to prevent the reel unwinding under the weight of the drawbridge. Material removed in forming the entrance cut-out in the 'south' end can be cut vertically down the centre and fastened back with small hinges (or tape hinges) to provide working doors in addition to the drawbridge.

Whatever further refinements are then added is mainly a matter of personal choice. The tower faces and walls should be painted light grey and then 'lined' with dark brown to represent stonework. Bottom edges can be touched up with green and 'weathering' stains added, if your artistic abilities run in that direction. Galleries can be stained with dark oak wood dye, or painted brown. The courtyard can be grey or green. If you want elaboration, flagpoles can be mounted in each tower with flags properly strung on thread, so that they can be raised and lowered. Inside the fort itself there is plenty of scope for building sheds and offices, with a sentry box near the main gate, and so on. In fact, having completed the main assembly you can profitably add a similar amount of working time on details which will make your ten shilling fort even more expensive looking.

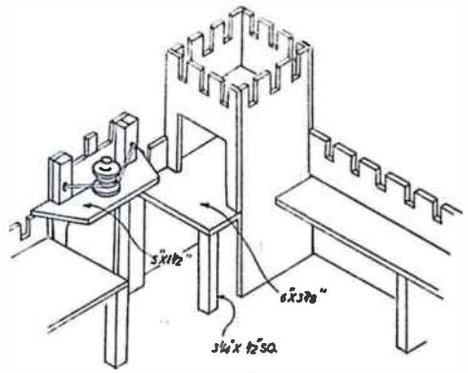


Fig. 7

THAT'S THE SPIRIT!

METHYLATED spirit has many general uses. Here are a few.

A drop of meths poured on a screw which has rusted in position will often loosen it sufficiently to be turned.

Add about a tablespoonful of meths to the water used for cleaning windows. It removes grime and stains, promotes a brilliant polish and helps to keep down insects.

Mixed with whiting it is probably the finest and safest silver cleaner.

Tender feet may be hardened with a spoonful of alum dissolved in a wineglassful of meths; apply night and morning. When wearing new shoes for the first time, rub the feet with methylated spirit and prevent blistered feet. (R.L.C.)

Know your camera — Part 1

Eliminating those Blemishes

By E. S. Brown

A FEW minutes careful inspection of an exposed and developed film can reveal many an unsuspected camera fault. A film that shows white spots on its emulsion can almost certainly be ascribed to a dusty camera interior.

The minute spots of dust settle upon the sensitized surface of the film prior to exposure and result in that part of the emulsion being unexposed on development. These spots appear in the positive prints as black spots.

The cure is obvious, and it is always very good practice to thoroughly clean the camera interior with a non-fluffy cloth at every film change, and also to wipe the fresh roll-film to remove any dust before inserting it into the camera.

A scratched film caused by sand and grit

Straight lines and scratches running vertically down the film indicate the presence of sand or grit within the camera. This trouble can be avoided with a little forethought and care. Do not, under any circumstances, change your films on a sandy beach. To do so, almost invariably deposits a few sand grains within the camera, where they can do much harm, not only to the surface of the film, but very possibly to the shutter mechanism.

Flare spots or streaks of fogging across the surface of the film can be caused by pin-holes in the bellows, and in the case of box cameras, through light-leakage occurring at a damaged corner of the camera, or, perhaps, at the moveable portion where the film is inserted.

Pinholes generally make a round shape flare spot or patch with radiating shafts of fogging on the negative, and in bad cases can cause a complete fogging of the entire emulsion.

Where pinholes occur in the bellows the trouble can sometimes be very baffling, for some exposures are entirely free from fogging, whilst others are defective. If a careful note is taken of the exposures, it will usually be found that the flare marks occur at certain focal distances, that is, at a certain point on the distance or focusing scale. The explanation here is, that in all probability the pinhole which invariably occurs in the crease of the bellows is covered when the bellows are only partially extended, and so does not cause any tell-tale light leakage until the bellows are more fully extended.

Pinholes and extraneous light leakages are rather difficult to trace, and probably the best and simplest way is to place a lighted electric light bulb within the camera in a dark room and the fault will be quickly found.

One of the best repair mediums to use is the old fashioned black Court Plaster which is still obtainable at many chemists. The adhesive side of the plaster should be slightly moistened with the tongue, and after waiting a few seconds to become tacky it is then applied to the faulty part of the camera and well pressed into position. This material is ideal for bellow repairs, as it is extremely flexible, non-cracking and strongly adhesive.

Faulty seams and corners of box cameras should be repaired from the inside as well as the outside, as these cameras due to their somewhat bulky nature tend to receive a fairly rough usage.

Light leakages in the movable back of the camera are often caused through strained and weakened fixing clips. These should be carefully adjusted, so that they hold the back of the camera in tight contact with the rest of the body.

Most camera backs have a thin metal light trap incorporated in their construction. This often takes the form of mating metal channels, and should these be slightly bent or distorted, then a light leakage is bound to occur at that point. They should be carefully rectified with a pair of small pliers. On some older models of folding hand-cameras, the movable back is provided with light seals of red plush or velour. In time this wears thin, or if the camera has been stored away a considerable time, it is liable to be attacked by moth grubs. In this case the old material should be carefully removed with a sharp knife, and replaced.

With box cameras, the interior is invariably constructed of light metal, which is coated with a dead matt black finish. Should any of this paint become badly scratched or, perhaps, flake away, then a series of light reflections will occur upon exposure and badly fog the film. Any scratches should be retouched with photographic black matt paint. Where extensive flaking has occurred, it is best to completely smooth the surface with fine glasspaper, and give two thin coats of the paint.

A punctured or cracked film winding window is an almost certain cause of fogged and degraded negatives. Quite a good repair can be effected by cementing with cellulose adhesive, a small patch of dark red Cellophane on the inside of the window. If the damage is serious, however, a complete repair should be made by removing the damaged window and replacing with ruby coloured celluloid or plastic sheeting.

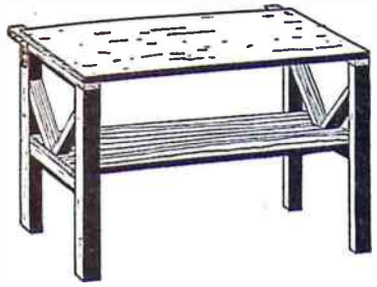
Effect of dust spots

When using a folding hand camera, always make sure that the stays supporting the platform are fully extended and locked into position, otherwise the lens will not be parallel to the surface of the film and so cause an aberration upon exposure. A spot of oil should be applied to the linkages of the stays, and any surplus immediately removed with a clean cloth.

The focusing scales of most folding hand cameras are divided into a series of

● Continued on page 295

Work Bench with Several Uses



By A. F. Taylor

IT is not difficult to make a very useful little work bench which can be easily moved from place to place as required. The one described does not take up much room, and may be used for a variety of purposes. The top is hinged so that it can be swung over when not required as a bench and used for sawing logs or other lengths of wood. The top is quite suitable to stand on or if this is too high it may be swung over and the half-way shelf used instead. Also with the top lowered it can be used as a garden seat.

Any type of wood is suitable, depending on how much it will be used and the nature of the intended work. It is an advantage, however, to make the bench top from a sound piece of hardwood to withstand any rough usage.

It is advisable to get a piece of hardwood in one piece for the top, otherwise you must join two pieces, preferably with a dowel joint, so that it is 24ins. long, 10ins. wide and ¾in. to 1in. thick. Each end is strengthened with a bar 12½ins. long, 2ins. wide and 1in. thick glued and screwed on the underside, and projecting 2½ins. at the back. On to this part the hinge is fixed so that the top is free to swing right over and hang down out of the way when sawing logs, etc.

The legs are made from 1½ins. square material, but if you want a very substantial bench you may increase these to 2ins. square. The height may be varied to suit your special needs, but for general work 24ins. will be found suitable.

Each pair of end legs are joined together by a bar at the centre with a mortise and tenon joint, so that they are 10ins. apart on the outside (Fig. 1). With a ¾in. tenon the bars must be cut 8½ins. long and of the same material as the legs. For very heavy work the joint can go right through, using a dowel for extra security.

When the glue has thoroughly set, the two pairs of legs can be joined together with the central plank 24ins. long, 7ins. wide and from ½in. to ¾in. thick, which is screwed to the end bars. Then the 'V' pieces can be cut and fixed, and these may also be 1½ins. square or slightly thinner. If the ends are cut at the correct angle to fit snugly, they will only need gluing and screwing to make a satisfactory job.

Now lay the top carefully on the legs so that the two hinges can be fixed. Ordinary hinges cannot be used, as these would not allow the top to swing right over. A very effective substitute is shown in Fig. 2. A steel 'ell' plate is securely fixed to each back leg with two screws and the hinge joint obtained with a substantial round-headed screw fixed through the end hole of the plate and into the projection of the top bar.

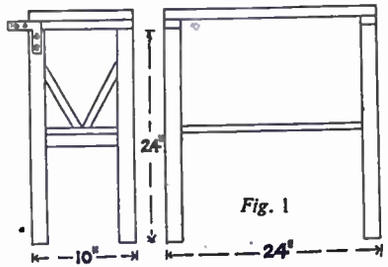


Fig. 1

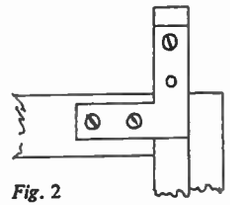


Fig. 2

● Continued from page 294

Know Your Camera

focal distances from near-subjects to infinity. The lower readings are really critical, especially with a large *f* aperture, and a misjudgment of a foot or so either way, can throw the subject completely out of focus. As we progress further along the scale towards infinity, the focus becomes less critical, and a slight under or over estimate of distance is of little importance.

A simple and efficient gauge is shown in Fig. 1. The eye-piece (A) is constructed from a 3ins. length of ¼in. internal diameter brass tube. The scale plate (B) is of approximately 2ins. radius and constructed from ⅛in. thick brass. It is secured by cutting a slot in the brass tube equal in length to the scale-plate and soldering into position. The indicator (C) is cut from ⅛in. thick brass and secured with a rivet. The indicator should be quite free to move under its own weight.

The scales are computed by measuring out a series of distances on the ground in conformity with those shown on your camera scale. Each set of distances are indicated by sticking pegs or staves in the ground. The gauge is then held close to the eye and pointed at the *ground-level* of each respective peg. At each reading the indicator will rest on a particular part of the scale-plate, and the distance is then scribed on the plate with a sharp instrument.

To use the gauge, focus the sighting tube so that its angle of incidence is at *ground-level* of the subject. Press the indicator to the scale-plate with a finger, then remove from the eye and take the reading given. It should be mentioned that this type of gauge is only suitable for taking readings on approximately level ground.

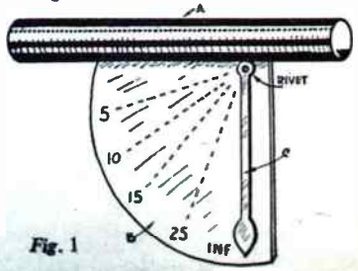
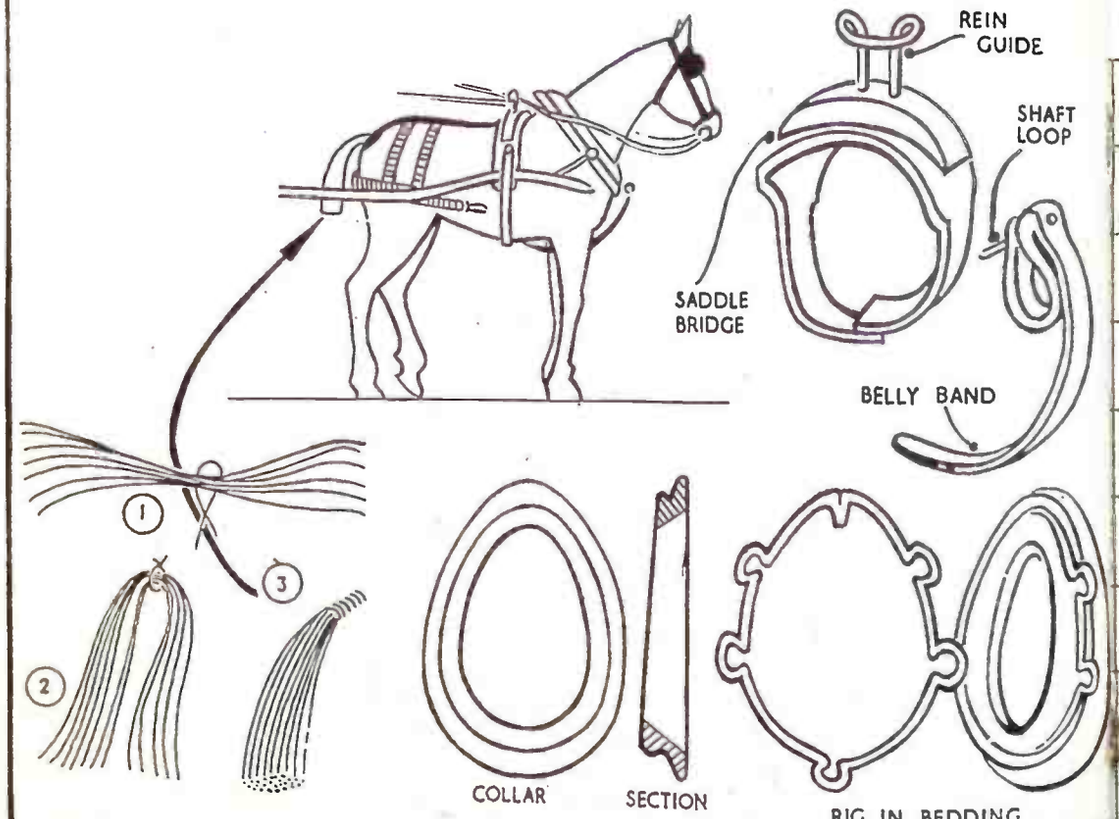


Fig. 1

PICTORIAL GUIDE TO MAKING A SCALE MODEL HORSE

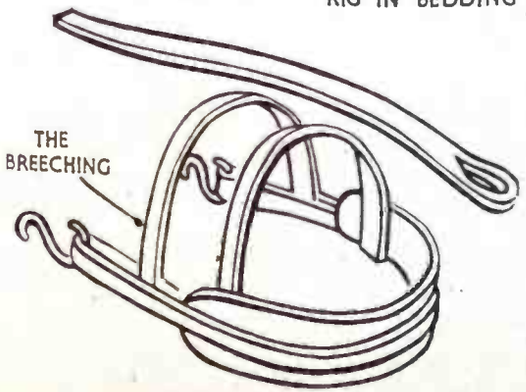


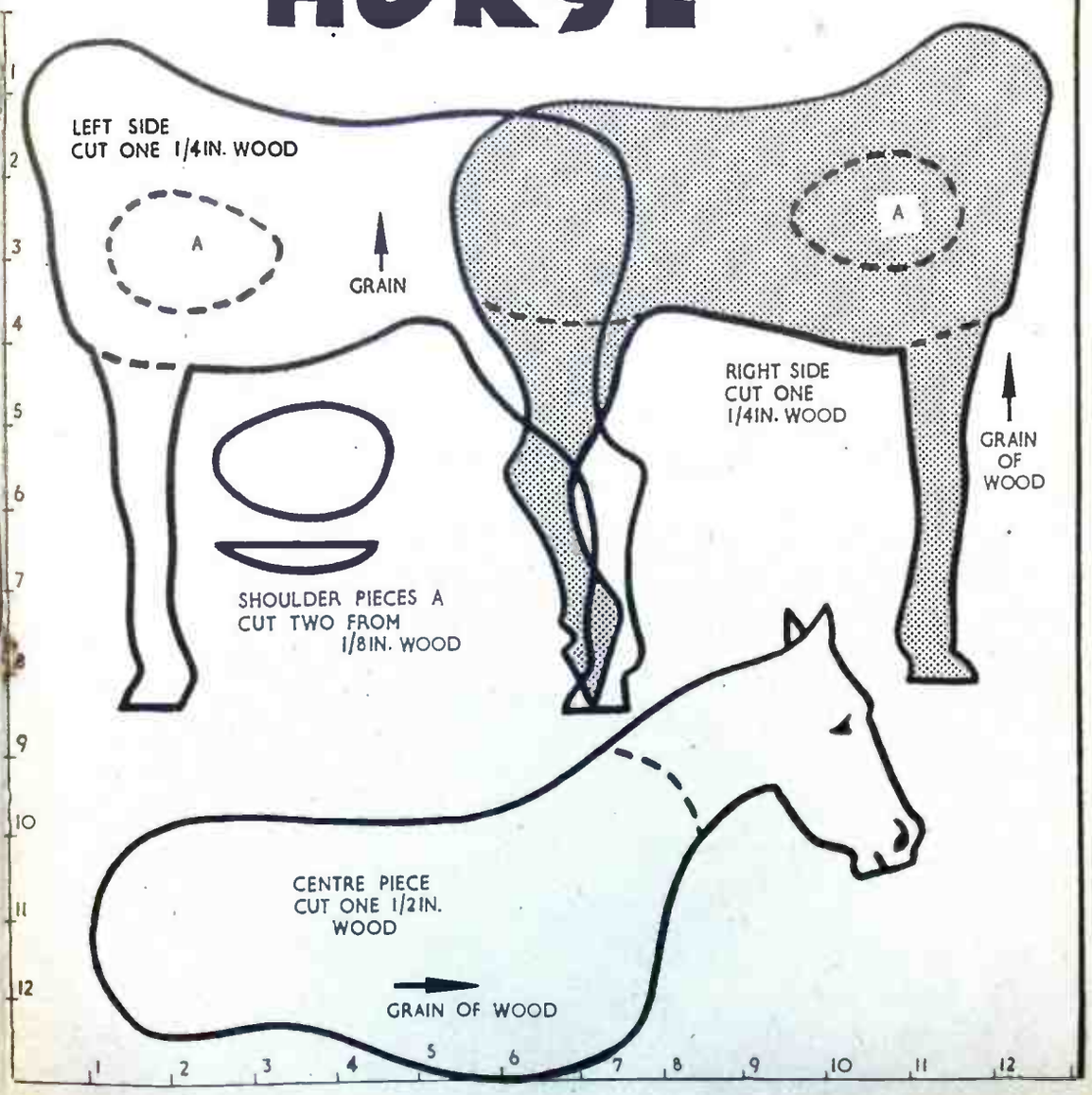
THIS horse is intended for use with models such as stage coaches, cabs or caravans. It can be enlarged or diminished by the square method, modifying the thickness of wood accordingly.

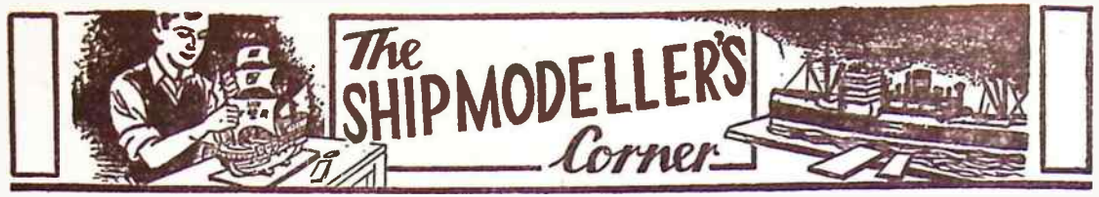
Glue the left and right sides on either side of the centre piece and fix the shoulder pieces (A) in position. Allow the glue to dry and then shape with a penknife or modelling knife. The tail is made from hair and glued into a hole as shown.

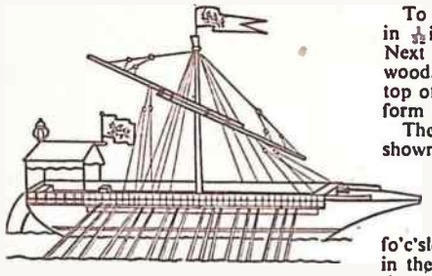
The collar is shaped from wood, the rein guide, etc., from wire, and the remainder from thin leather strips.

(M.h.)









VENETIAN GALLEY

By 'Whipstaff'

IN designing this model, I have based my re-construction on a drawing in an early work on naval architecture, supplemented by a study of various authorities and our present knowledge of the ships of the period. With these miniature models we can have quite a large fleet of historical interest and a constant source of pleasure.

Venice and Genoa were maritime powers of the Middle Ages, and our little model represents one of the smaller galleys or galliot of this period.

They were rigged with a lateen sail, but this is not shown on our model. The sailors of these vessels were not skilled in tacking and unless the wind was directly astern, they preferred to trust to their oars.

To make this model, first cut part (A) in $\frac{1}{32}$in. wood. This is the main deck. Next cut out (B) and (C), both in $\frac{1}{4}$in. wood. These are glued together, (B) on top of (C) and (A) on top of (B), to form the hull.

The bow and stern are shaped as shown in Figs. 1 and 2. If the part (D) is cut out at this stage it can be used as a template in shaping the stern.

Next cut out part (E), the fo'c'sle, and drill a $\frac{1}{4}$in. hole $\frac{1}{4}$in. deep in the exact centre of one long side for the gun; this side will be the front of the fo'c'sle. This part is now glued on as marked on the deck drawing, leaving a space on either side to accommodate the bulwarks.

The stern seat and sternboard are next cut and glued into position.

The bulwarks are cut from $\frac{1}{32}$in. wood. In my model I used boxwood stringing, and the vertical lines were cut in with a small model saw. The heavy black line is the upper wale. This is a length of Hobbies rigging cord, stretched taut and fixed in position with balsa cement.

In these vessels the deck beams protruded outwards from the side of the hull and formed a fulcrum for the oars, to which they were secured by leather thongs as in Fig. 4.

Fig. 5. Use a thin flat file $\frac{1}{16}$in. thick for this work, the thin edge being the right size.

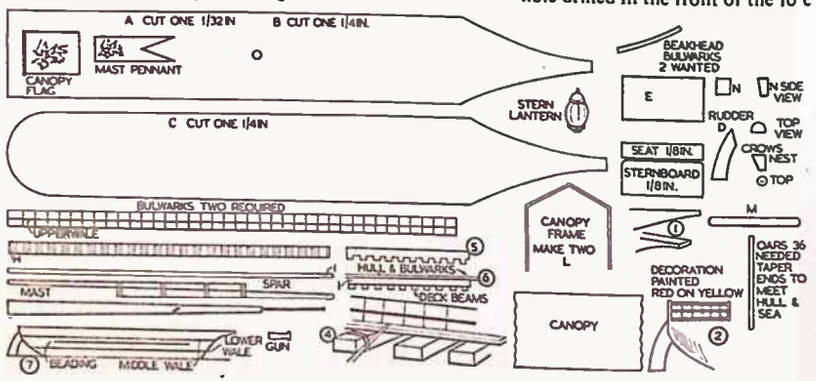
Next cut two strips of veneer to the size of part (I) and glue into position down one side of each part (H). Now file the spaces between the deck beams back to the edge of part (I), as in Fig. 6, which shows the finished assembly glued to the hull level with the top of (B).

The lower wale is now fitted. Again use the rigging cord, drawn taut and cemented in position. There is also a strip of ornamental beading directly underneath the deck beams. For this again use rigging cord (Fig. 7). The centre wale is not added until the oars are in position.

Next cut two bulwarks for the beak-head deck from $\frac{1}{4}$in. wood and glue in position. They do not follow the line of the beak exactly as will be seen from the dotted line on the deck plan. A small gun is filed to shape and glued into the hole drilled in the front of the fo'c'sle. A piece of thin black knitting needle serves well for this.

The next addition is the canopy at the stern. Cut a wood former to the shape of the inside line of (L) and bend thin wire around this to form the two canopy

● Continued on page 302



All parts here are drawn to half scale

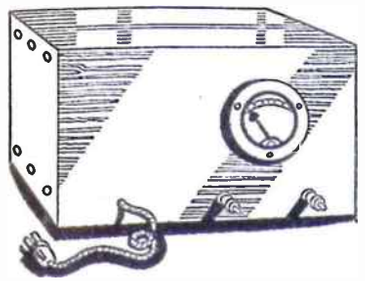
This model also depicts one of the first introductions of the gun to the ship's armament, one being placed in the bow of the galley. In fact, in this type of vessel the fighting power was always concentrated in the front of the ship.

To obtain this effect in so small a model the following method should be used.

Cut two pieces of part (H) and file the shaded portions half-way through; boxwood again is the best material for the purpose. This gives two strips as at

Reliable and cheap

AN ACCUMULATOR CHARGER



By F. G. Rayer

A CHARGER to deal with any type of battery up to about 12 V can be constructed at quite low cost, the actual parts required being very much cheaper than the cost of a ready-made charger. The circuit described here is a reliable one, and with average components and ordinary use it can be expected to function for years without breakdown. The actual cost of the current drawn from the mains when charging an accumulator is almost negligible. In addition to the eventual saving from this, there is also the added convenience of not needing to carry the battery to a shop to be charged.

Full details about the correct methods of charging will be given in another article, but it is worthwhile noting here some of the purposes to which such a charger can be put. For example, the accumulators used with some models may, with advantage, be charged at home, as may the accumulator used in some types of portable and battery receiver. Motor-cycle and car batteries can also be charged, and when it is possible to draw current from a near-by socket, there is no need to remove the battery from the vehicle, which is a great convenience. Occasional charging (e.g., through the night) will be of great benefit when a vehicle is normally difficult to start because the accumulator is somewhat run down.

Circuit and Parts

The circuit is shown in Fig. 1, and only three items are necessary — a transformer to reduce the voltage, a rectifier to change the alternating current to direct current, and a meter to show the charging rate. These items are best purchased to suit the *maximum* output from the charger which will be required. For example, if batteries of more than 6 V will never be charged, it is pointless to use a 12 V transformer or rectifier, especially as the cost of these components depends directly upon the voltage and current they will handle. As an example of this, a small 6 V charger could be built for less than £1, whereas a large one for rapid charging of larger batteries might cost three or four times this sum.

As an aid to selecting suitable components, the following points will help. The

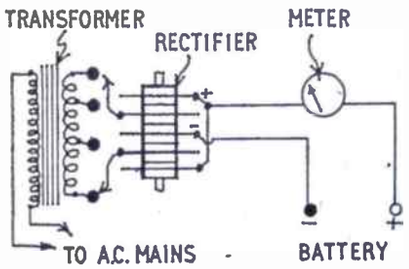


Fig. 1—Circuit

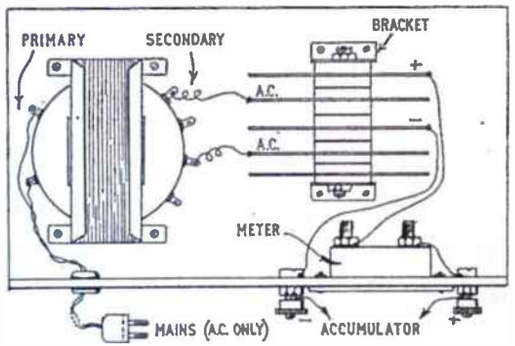


Fig. 2—Complete wiring plan

voltage rating of the rectifier should be equal to, or greater than, the voltage of the largest battery to be handled, e.g., a 6 V rectifier for 2 V, 4 V or 6 V, or a 12 V or 15 V rectifier for any battery up to 12 V.

The *current* rating of the rectifier is again equal to, or greater than, the maximum current required. A 1 amp. rating will do for model, radio, and motor-cycle batteries. For car batteries 2 amps. is better. A 1 amp. rectifier would charge the latter just as well, but take twice as long as the 2 amp. rectifier.

When charging at home, a low rating is not much disadvantage, as it is easy to leave the charger operating for a day or two when necessary. A 1 amp. rectifier will thus do well, as a rule.

Once the rectifier has been decided upon, the mains transformer can be obtained to suit. It will require a 1 amp. secondary for a 1 amp. rectifier, and so on. To compensate for voltage drop and the fact that charged cells will rise in voltage, the secondary should give at least 50 per cent more voltage than the voltage of the largest battery to be charged. That is, 9 V for a 6 V battery, or 18 V for a 12 V battery.

It is very helpful to use a transformer with several tappings on the secondary, so that a range of voltages can be selected. The same charger will then be able to deal with any type of battery up to the maximum figure. Such components are easily purchased. It may also be possible to use a radio or model transformer, if to hand.

Only the meter remains to be mentioned, and one reading 0–1, 0–2, or 0–5 amps. will do well. Ex-service R.F. (radio frequency) thermo-couple meters are not suitable for such purposes, but any type of D.C. ammeter, charging meter, or shunted moving-coil milliameter is satisfactory.

Simple Wiring

All connections are shown in Fig. 2, and the parts are mounted upon a wooden base and panel, 3-ply being satisfactory for the latter. The dimensions will depend to some extent upon the parts, but 5ins. by 7ins. will in each case normally be ample.

A suitable length of twin-flex, with mains plug or adapter, is taken to the transformer primary. If several tags are fitted here, for 200–250 V, then the correct tags are chosen to suit the house

voltage. If a 3-pin outlet is available, with Earth socket, 3-core flex may be used, the Earth lead (large pin) being connected to transformer core and one secondary tag.

Positive and negative on the rectifier may be marked by the usual signs, or by red and black. Some manufacturers place the positive tag in the centre, instead of the negative one, as in Fig. 2. The actual markings should, therefore, be followed.

The 'A.C.' tags may be marked green, or with a symbol like 'S'. Two short lengths of flex are taken from these tags, to join to the transformer secondary tags. Two terminals complete wiring, the meter being in series with one.

Correct Polarity

It is absolutely essential that the correct polarity, both for rectifier and accumulator, be observed, or damage to rectifier, meter, or battery will arise. If desired, this can be guarded against to some extent by including a 1, 2 or 5 amp. fuse in one lead, or by using 1, 2 or 5 amp. fuse wire for the connection between meter and positive terminal.

The rectifier is best mounted with fins vertical, and two metal brackets can be made to accomplish this. In Fig. 2, a full-wave type with 4 tags is shown, and this is most efficient.

If a half-wave rectifier with only two tags is to hand, it can be used instead. To do this, wire one secondary tag to negative on rectifier, and the other secondary tag to negative accumulator terminal. The positive rectifier tag is then connected to the meter, as in Fig. 2.

If a transformer without secondary tappings is to hand, and gives too high a voltage, a resistance may be added as in Fig. 3, to reduce the current and voltage. It may be wound with 26 S.W.G. iron or resistance wire, about 2ft. usually being sufficient. A metal strip can be clamped in place when the correct position (or resistance) has been found.

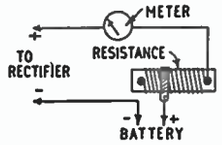


Fig. 3

If this method is used and the charging rate is too high for a small battery, as shown by the meter, then the resistance is increased. On the other hand, if the rate is too low, the resistance is reduced. Adjustable resistances of various kinds can also be purchased, some for panel operation with a knob. With these, the knob is simply turned until the charging rate is suitable for the battery.

Containing Case

To protect the components and avoid possible shocks from touching the mains or primary tags on the transformer, a case made from thin wood will be necessary. This can best be made with top, back and sides permanently fitted together, base and panel forming bottom and front, when secured in place by small screws. Some measure of ventilation is required, and rows of holes in sides and back will provide this.

Charging

The accumulator is joined to the two output terminals, not forgetting that polarity must be observed. When the mains plug is inserted, the meter pointer should move. If it does not, the circuit is interrupted somewhere — most probably through dirty accumulator terminals.

If the meter pointer tries to move in the wrong direction, then the two connections going to it must be reversed, and the pointer will move over the scale correctly.

If the charging rate is too low, the resistance (Fig. 3) is reduced in value, or the transformer secondary tappings are changed to apply a slightly higher voltage to the rectifier. If the rate is excessive, the voltage is reduced by selecting other tappings, or the resistance value is increased. For a 2 V battery, about 4 V will be necessary; with 6 or 7 V for a 4 V battery, and 8 V to 10 V or so for a 6 V battery.

After a time, as the battery begins to charge up, the meter pointer will fall back a little, but this can be disregarded. Most batteries have a maximum charging rate marked on them, and this must not be exceeded. For example, a radio battery of average size would have a maximum rate of 1½ amps. Any *lower* rate than this maximum figure is satisfactory.

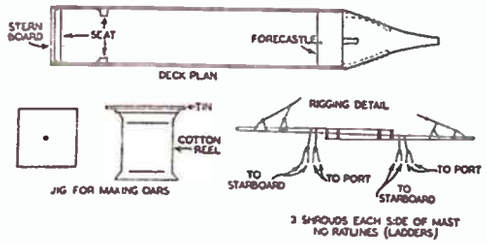
●Continued from page 298

Venetian Galley

frames. Cement into holes drilled in the deck. Piece (M) is cut from 1/32in. boxwood and glued in place to form the top bar of the canopy, while the canopy itself can be cut from thin material, or even paper and cemented on top of the framework. The two seats (N) are cut and shaped and glued in position on the deck up against the front canopy supports to complete the deck assembly.

The base, 9ins. by 4½ins., is painted blue and covered with Cellophane. Glue in position and allow to wrinkle very slightly.

The hull is painted and glued on to the centre line of the base, brown below the lower wale and red between the lower wale and the lower edge of the bulwarks, leaving the deck beams natural wood colour. The bulwarks are painted yellow. The lower wale is also painted yellow, the beading under the deck beams gold, the middle wale yellow and the upper wale gold.



The next stage is to make the oars. These must all be exactly alike and, therefore, a jig should be made. This consists of a piece of thin metal or stout tin, with a 1/16in. hole drilled through the centre and mounted on a cotton reel. The oars are cut from bamboo and roughly shaped, then gently tapped through the hole in the jig. This results in thirty-six pieces of bamboo dowel all exactly the same diameter, from which to make the oars.

Cut the oars 1½ins. long and, using tweezers, cement into position on the model. The oars are set up in threes, one oar to each deck beam and one beam between each set of three. The upper end of each oar is glued to the top edge of (B). The top wale (rigging cord) is now added along the top of the oars.

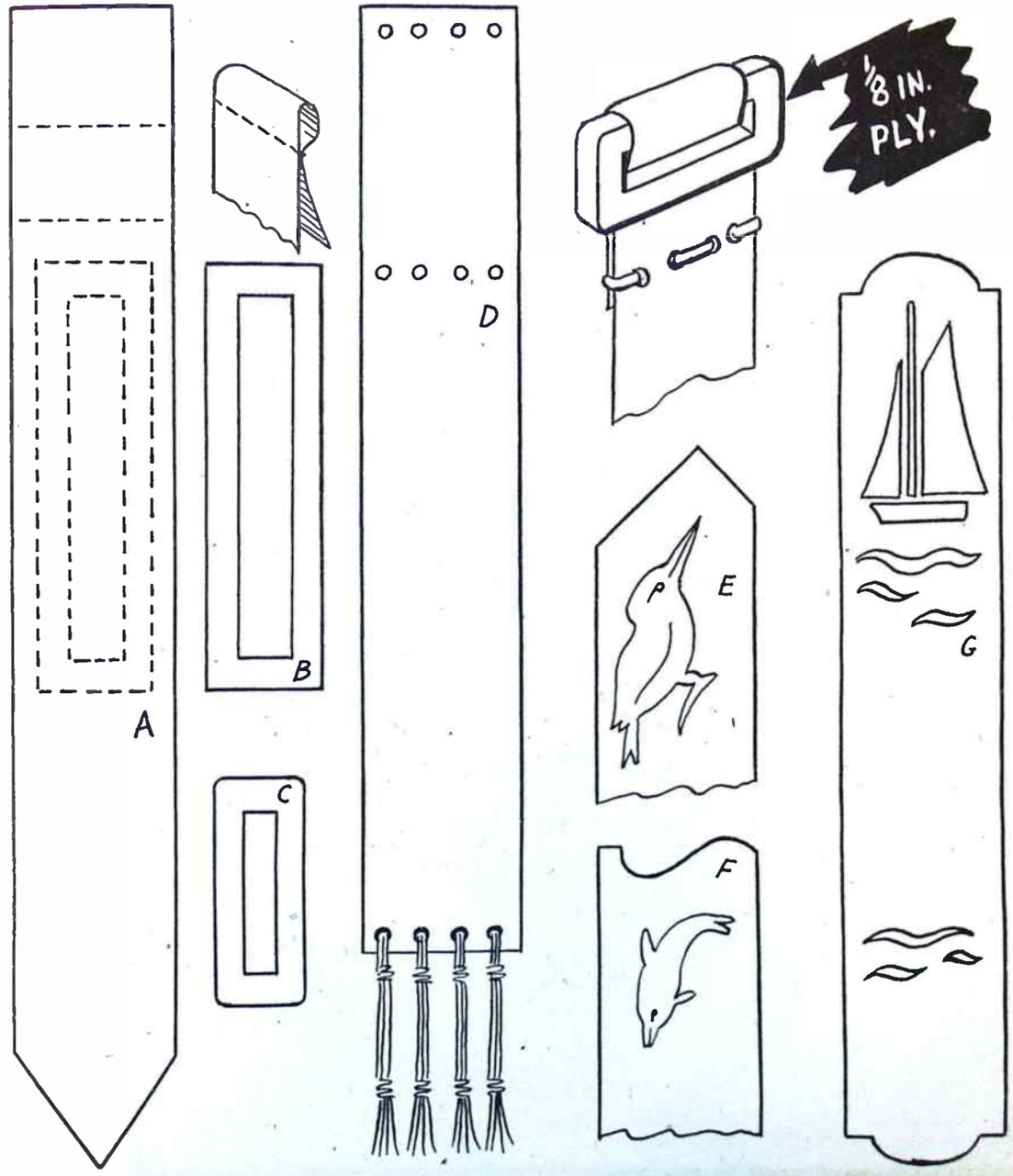
The canopy is painted crimson (or red) with gold markings, and the tops of the seats are patterned in red and white squares.

The mast and spar for the lateen sail can be made from the illustration. The spar is in two parts, lashed together. With the flags painted, and the simple rigging of the period added, the little model is complete.

Next week's free Design will be for a Decorative Cover for your 'Radio Times'—an ideal choice for a gift.

See page 290

Patterns for Bookmarkers



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